Remarks

Claims 6-20 and 22-24 have been cancelled, claims 25 and 27 have been amended, and claims 28-39 have been added. This application presently contains claims 1-5, 21, and 25-39. No new matter is added by these amendments. Support for the amendments may be found in the original claims and throughout the specification, *e.g.*, at page 13 line 4 through page 24 line 14, page 25 line 9 through page 45 line 5, and Examples 1 and 2. Applicants respectfully request entry of the foregoing amendments and submit that these amendments put the application in condition for immediate allowance or appeal.

Applicants maintain that the restriction of claims 1-5, 21, and 25-27 is improper. The Office denies that a serious burden on Examiner would result if the claims were not restricted, maintaining that the restriction is proper "...since the inventions of Groups I to IV have their own separate classification they are distinct." Office Action at page 2. Applicants assert that the complete examination of the application would be handled most expeditiously by treating all of the pending claims as a single entity. As Section 803 of the MPEP directs, "[i]f the search and examination of an entire application can be made without serious burden, the Office must examine it on the merits, even though it includes claims to distinct or independent inventions." Moreover, a serious burden would arise if the application remains restricted. To facilitate prosecution, however, Applicants have elected claims 1-5, 21, and 25-27 and acknowledge that the restriction requirement is made final. As such, non-elected Claims 6-20 and 22-24 have been cancelled without prejudice or disclaimer to the underlying subject matter.

In the Office Action dated October 3, 2002, the Office alleged that Applicants have failed to comply with the formalities for claiming priority, by failing to provide a specific reference to the claimed prior application in the first sentence of the specification. Office Action at page 2. Applicants respectfully point out that, a priority claim to provisional application 60 142,981, filed 07 12 1999, was properly made in the transmittal letter submitted with this application on July 11, 2000. In addition, a Preliminary Amendment was filed September 17, 2001, to amend

the specification to reflect said priority claim. Copies of the July 11, 2000 transmittal letter, and the September 17, 2001 Preliminary Amendment, each with the accompanying stamped post card, are enclosed for the Examiner's reference. Courtesy copies of the Information Disclosure Statement, PTO Form 1449 and accompanying stamped post card, also filed on September 17, 2001, are also included and brought to the Examiner's attention. As this Information Disclosure Statement was timely filed on September 17, 2001, Applicants do not believe any additional fees are due in conjunction with this submission. Applicants respectfully request that the Examiner indicates he has considered the references cited by initializing the references in the 1449 and returning the Examiner-initialed 1449 to Applicants' representatives.

Rejections Under 35 U.S.C. § 101

Claim 21 was rejected under 35 U.S.C. § 101 for an alleged lack of both "credible asserted utility" and "well established utility." Office Action at page 2. The Office alleges that utility was not demonstrated for plant HES1 protein activity because SEQ ID NO: 1 was identified "based on the degree of DNA sequence identity with DNA isolated in yeast mutation experiments that showed plieotropic sterol-related phenotypes and wherein the encoded yeast protein showed homology for human oxysterol binding protein (OSBP)." Office Action at page 3. The Office further alleges that errors frequently result when relying solely on protein prediction programs to infer protein function from sequence homology, and that the specification lacks data demonstrating that SEQ ID NO: 1 encodes a plant HES1 protein. Office Action at page 4. Applicants respectfully traverse this rejection.

Applicants respectfully disagree that errors frequently occur when inferring protein function from sequence homology. Applicants refer the Examiner to the following articles, copies of which are enclosed for the Examiner's convenience, where sequence similarity is routinely used by those of ordinary skill in the art as a predictor of function. *See, e.g.*, Venter, *et al.*, The Sequence of the Human Genome, *Science*, *291*: 1304-1351 (2001); Woese, *et al.*,

Conservation of Primary Structure in 16S rRNA, *Nature*, *254*: 83-85 (1975). Accordingly, Applicants maintain that one of ordinary skill in the art would have recognized, in light of Applicants' teachings, that at the time of filing Applicants had possession of the claimed invention for the uses described in the specification.

Furthermore, Applicants respectfully reject that they have relied solely on protein prediction programs to infer HES1 function. Applicants bring to the Examiner's attention that SEQ ID NO: 1 is not only a homologue of yeast HES1, but also contains complete identity to yeast HES1 within a highly conserved functional motif, the oxysterol-binding protein consensus sequence. See SEQ ID NO:1 at amino acid positions 72 through 82, and the specification at page 14 lines 16 and 17. This motif, which is comprised of nine conserved and two nonconserved amino acids, has been shown to be in the domain responsible for oxysterol binding function in mammals. *See, e.g.*, Jiang *et al.*, A new family of yeast genes implicated in ergosterol synthesis is related to the human oxysterol-binding protein, *Yeast* 10: 341-53, (1994), at page 351, column 2.

Finally, Applicants respectfully traverse this utility rejection because the Office "must do much more than question operability – [it] must set forth factual reasons which should lead one skilled in the art to question the objective truth of the statement of operability." *In re Gaubert*, 524 F.2d 1222, 1225-26, 187 U.S.P.Q. 664, 666 (C.C.P.A. 1975); *see In re Brana*, 51 F.3d 1560, 1567, 34 U.S.P.Q.2d 1436, 1441 (Fed. Cir. 1995); MPEP § 706.03. Applicants respectfully note that in solely challenging the reliability of the underlying methodology – i.e., assigning protein function based on sequence identity – the Office has not provided any specific evidence suggesting that SEQ ID NO: 1 does not encode a plant HES1 protein. As recited by the Examiner, such specific evidence might include a lack of conservation of active site residues, or sequence variation suggesting the insertion of additional functional domains. See, e.g., Office Action at page 3 citing Doerks at page 248; and Office Action at page 4, citing Bork at page 426. In this case, not only has the Office failed to present any specific evidence suggesting that SEQ

ID NO: 1 does not encode a plant HES1 protein, but Applicants have, in fact, shown perfect conservation of the known signature motif common to oxysterol-binding proteins, such as HES1. Applicants respectfully assert that the Office has presented no specific factual reasons that undermine the credibility of the asserted utility, and so has not met the requisite burden to impose a 35 U.S.C. § 101 rejection. Applicants therefore respectfully request that the 35 U.S.C. § 101 rejection be withdrawn.

Claim 21 was also rejected under 35 U.S.C. §112, first paragraph, as not being enabled by the specification because the claimed invention allegedly lacks utility. Applicants respectfully traverse this rejection. This rejection has been overcome by the foregoing arguments regarding utility. Thus, this rejection under 35 U.S.C. §112, first paragraph is improper. Reconsideration and withdrawal are respectfully requested.

Written Description Rejections Under 35 U.S.C. § 112, 1st paragraph

Claims 1-5, 21, and 25-27 were rejected under 35 U.S.C. § 112, 1st paragraph for purportedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one of skill in the art that the inventors had possession of the claimed invention at the time the application was filed. Office Action at pages 4-5. Applicants respectfully traverse this rejection.

As the Office notes, the purpose of the written description requirement is to ensure that the inventors had possession of the claimed subject matter, *i.e.*, to ensure that the inventors actually invented what is claimed. *Gentry Gallery Inc. v. Berkline Corp.*, 134 F.3d 1473, 1479, 45 U.S.P.Q.2d 1498, 1503 (Fed. Cir. 1998); *Lockwood v. American Airlines*, 107 F.3d 1565, 1572, 41 U.S.P.Q.2d 1961, 1966 (Fed. Cir. 1997); *In re Alton*, 76 F.3d 1168, 1172, 37 U.S.P.Q.2d 1578, 1581 (Fed. Cir. 1996). In accordance with this purpose, Applicants need not "describe," in the sense of Section 112, all things that are encompassed by the claims. To contend otherwise would contradict established jurisprudence, which teaches that a patent may

be infringed by technology developed after a patent issues. *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 U.S.P.Q.2d 1461, 1464 (Fed. Cir. 1989). A related and equally well-established principle of patent law is that claims "may be broader than the specific embodiment disclosed in a specification." *Ralston Purina Co. v. Far-mor-Co*, 772 F.2d 1570, 1575, 227 U.S.P.Q. 177, 179 (Fed. Cir. 1985), *quoting In re Rasmussen*, 650 F.2d 1212, 1215, 211 U.S.P.Q. 323, 326 (C.C.P.A. 1981).

The Office asserts that all of the nucleic acid molecules encompassed by the claims are not adequately described in accordance with 35 U.S.C. § 112. Office Action at page 5. Applicants respectfully disagree. An adequate written description of a genus of nucleic acids may be achieved by means of a "recitation of a representative number of [nucleic acids], defined by nucleotide sequence...or of a recitation of structural features common to the members of the genus." *Regents of the University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1568-69, 43 U.S.P.Q.2d 1398, 1406 (Fed. Cir. 1997). The structural feature relied upon to describe the claimed genus must be capable of distinguishing members of the claimed genus from non-members. *Id.*

Applicants assert that the genus of recombinant DNA constructs is supported by Applicants' disclosure of "structural features common to the members of the genus." In particular, the specification provides descriptions of the nucleic acid molecules encompassed by the present invention, constructs comprising such nucleic acid molecules, and methods of constructing such constructs, at, *e.g.*, page 13 line 5 through page 16 line 24, page 28 line 5 through page 34 line 16, and page 49 line 9 through page 52 line 9. Specifically, Applicants have identified a structural feature common to each of the nucleic acid molecules of the present invention: an oxysterol-binding protein consensus sequence of the following eleven amino acids, Glu (Lys,Gln) Xaa Ser His (His,Arg) Pro Pro Xaa (Ser, Thr, Ala, Cys, Phe) Ala, where Xaa represents any one of the twenty standard amino acids. Furthermore, the specification sets forth how to isolate nucleic acids encoding members of the family of oxysterol-binding proteins, and

how to assay for elevated phytosterol levels in transformed plants. *See, e.g.*, page 13 line 5 through page 16 line 24, page 49 line 9 through page 52 line 9, Example 2 at page 141 through page 154 and Example 3 at page 155. Therefore, a person of ordinary skill in the art, *e.g.*, a molecular biologist, would, after reading the present specification, understand that Applicants had possession of the claimed invention.

Accordingly, the present case is clearly different from *Eli Lilly*. The present claims "distinguish the claimed invention from others" and define "structural features commonly possessed by members of the genus that distinguishes them from others," unlike the claims at issue in *Eli Lilly*. *Regents of the University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1568-69, 43 U.S.P.Q.2d 1398, 1406 (Fed. Cir. 1997). Thus, there is no deficiency in the written description support for the claimed invention.

For the foregoing reasons, Applicants submit that one of ordinary skill in the art would recognize that at the time of filing Applicants were in possession of the claimed inventions. Therefore Applicants respectfully request that the written description rejection under 35 U.S.C. §112, first paragraph, be withdrawn.

Enablement Rejection Under 35 U.S.C. § 112, 1st paragraph

Claims 1-5, 21, and 25-27 were rejected under 35 U.S.C. §112, first paragraph, because the subject matter allegedly was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Applicants respectfully disagree. The Office has not met the evidentiary burden to impose an enablement rejection. A specification that discloses how to use a claimed invention "must be taken as in compliance with the enabling requirement of the first paragraph of § 112 unless there is reason to doubt the objective truth of the statements contained therein." *In re Brana*, 51 F.3d 1560, 1566, 34 U.S.P.Q.2d 1436, 1441 (Fed. Cir. 1995), *quoting In re Marzocchi*, 439 F.2d 220, 223, 169 U.S.P.Q. 367, 369 (C.C.P.A. 1971) (emphasis in original).

The present specification indeed discloses how to make and use the present invention (*e.g.*, by providing protocols for identifying HES1 candidate nucleic acid sequences, and transforming plants with a nucleic acid encoding HES1). *See, e.g.*, specification at page 13 line 5 through page 16 line 24, page 28 line 5 through page 34 line 16, page 49 line 9 through page 52 line 9, and Examples 1 and 2. Moreover, the present specification also discloses additional uses of the claimed invention (*e.g.*, to enhance phytosterol levels in plants to provide nutritionally enhanced food products, including cholesterol-lowering products). *See, e.g.*, specification at pages 1-5.

The Office has provided neither evidence supporting the rejection nor any explanation of why the specification allegedly fails to enable these uses. *See In re Wright*, 999 F.2d 1557, 1561-62, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993); *Ex parte Lemak*, 210 U.S.P.Q. 306, 307 (Bd. App. 1981) ("pure conjecture" does not substantiate rejection for lack of enablement). Therefore, as the specification clearly enables at least the methods of making and using the invention as set forth in the Examples, the enablement requirement has been satisfied. *Cf. Johns Hopkins University v. CellPro*, 152 F.3d 1342, 1361, 47 U.S.P.Q.2d 1705, 1719 (Fed. Cir. 1998) ("the enablement requirement is met if the description enables any mode of making and using the invention") (emphasis added), *quoting Engel Indus. v. Lockformer Co.*, 946 F.2d 1528, 1533, 20 U.S.P.Q.2d 1300, 1304 (Fed. Cir. 1991).

The Office argues that "[i]t is well established that sequence similarity is not sufficient to determine functionality of a DNA coding sequence." Office Action at page 7. However, Applicants have not relied solely on sequence similarity to support utility or enablement as suggested by the Office. *See infra* at page 4. Rather, as previously discusssed, Applicants have shown that SEQ ID NO: 1 is not only a homologue of yeast HES1, but also contains complete identity to the oxysterol-binding protein consensus motif, which has been shown to be in the domain responsible for oxysterol binding function in mammals.

The Office asserts that, because prediction of protein function from sequence homology can have unpredictable results, "undue trial and error experimentation would have been required by one skilled in the art to screen through a multitude of homologous nucleic acids and fragments thereof and test for HES1 activity..." Office Action at pages 8-9. Applicants respectfully disagree with these assertions. Although a large number of nucleic acid molecules might or might not be obtained by the initial hybridization step, one of skill in the art would be able to narrow the pool to be assayed by sequencing the nucleic acid molecules obtained to determine whether they have the oxysterol-binding protein consensus motif. Although the hybridization, sequencing and assay steps might require a substantial amount of experimentation, such experimentation is not "undue experimentation" because the methods needed to practice the invention were well known, and there is a high level of skill in this art.

There are considerable resources available to one of skill in the art regarding conditions and approaches that can be utilized to isolate, confirm, and introduce into other hosts nucleic and amino acid sequences within the scope of the claims. *See, e.g.*, references cited in the specification at page 155. It is established patent jurisprudence that Applicants need not teach "conventional and well-known genetic engineering techniques." *E.g., Ajinomoto Co. v. Archer-Daniels-Midland Co.*, 228 F.3d 1338, 1345, 56 U.S.P.Q.2d 1332, 1337 (Fed. Cir. 2000). Furthermore, the level of skill in this art is high, and the performance of routine and well-known steps, such as, *e.g.*, an assay to confirm changes is sterol metabolism, cannot create undue experimentation even if it is laborious. *See In re Wands*, 858 F.2d at 737, 8 U.S.P.Q.2d at 1404; *In re Angstadt*, 537 F.2d 498, 504, 190 U.S.P.Q. 214, 218-219 (C.C.P.A. 1976). On the basis of the foregoing, Applicants respectfully request reconsideration and withdrawal of the enablement rejections under 35 U.S.C. §112, first paragraph.

Rejections Under 35 U.S.C. § 112, 2nd paragraph (Indefiniteness)

Claims 1-5, 21, and 27 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite "for failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention." Office Action at page 9.

Rejection of claims 1-5 and 21

Claims 1-5 and 21 were rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite due to use of the phrase "substantially purified." Office Action at page 9. Specifically, the Office asserts that "'substantially purified' is a relative term and therefore is indefinite." Office Action at page 9. Applicants respectfully disagree.

Applicants respectfully point out that the use of a relative term does not make a claim *per se* indefinite. *See, e.g.*, MPEP § 2173.05(b), which cites *Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)("[t]he fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph.") In addition, MPEP §2173.05(b) provides the following specific guidance on the proper use of the relative term "substantial" in claim language: use of the modifier "substantial" does not render a claim limitation indefinite provided that the specification contains guidelines sufficient to teach one of ordinary skill in the art what was meant by the limitation. *See, e.g., In re Mattison*, 509 F.2d 563, 18 USPQ 484 (CCPA 1960); *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988); *compare Ex parte Oetiker*, 23 USPQ2d 1641 (Bd. Pat. App. & Inter. 1992)(holding the phrase "substantial portion" to be indefinite because the specification lacked an adequate standard for measuring the degree intended).

In this particular application disclosure, the phrase "substantially purified" is defined in the specification as follows:

> The term "substantially purified," as used herein, refers to a molecule separated from substantially all other molecules normally associated with it in its native state. More preferably a substantially purified molecule is the predominant species present in a preparation. A substantially purified molecule may be greater than 60% free, preferably, 75% free, more preferably 90% free, and most preferably 95% free from other molecules (exclusive of solvent) present in the natural mixture. The term "substantially purified" is not intended to encompass molecules present in the native state.

Specification at page 12, lines 14-20. Applicants respectfully assert that, consistent with the requirement of MPEP §2173.05(b), the specification contains guidelines sufficient to teach the meaning of "substantially purified" to one of ordinary skill in the art. Specifically, this definition is sufficient to convey to a person of ordinary skill in the art the meaning of this phrase because these guidelines include multiple verbal descriptions (*e.g.*, "separated from substantially all other molecules normally associated with it in its native state," and "the predominant species present in a population"), numerical ranges of purity, as well as an explicit disclaimer of a definition encompassing molecules present in their native state.

More importantly, MPEP § 2173.02 states that "[d]efiniteness of claim language must be analyzed, not in a vacuum, but in light of: (A) The content of the particular application disclosure; (B) The teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." Therefore, under MPEP § 2173.02, the scope of the present invention is properly determined by construing the phrase "substantially purified" in the context of the other language present in claims 1-5 and 21. A person of ordinary skill in the art would understand that the "substantially purified" nucleic acids claimed in this invention must also satisfy the phrases drawn to the sequences comprising SEQ ID NO: 1, SEQ ID NO: 622, or a "plant HES1 protein."

Finally, Applicants respectfully disagree with the Office's suggestion to replace "substantially purified" with an "art accepted term" such as "isolated." Office Action at page 9.

By negative implication, the Office has effectively asserted that "substantially purified" is not an "art-accepted term," at least when modifying the phrase "nucleic acid." Applicants respectfully disagree. It is a well established principle of patent law that "a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification..." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d at 1582, 39 USPQ2d at 1573 (Fed. Cir. 1996)(citing *Hoechst Celanese Corp v. BP Chems. Ltd.*, 78 F.3d 1575, 1578, 38 USPQ2d 1126, 1129 (Fed. Cir. 1996), *cert denied,* 519 U.S. 911, 136 L. Ed. 2d 198, 117 S. Ct. 275 (1996). Even assuming *arguendo* that the modifier "substantially purified" is an infrequently used phraseology for plant biotechnology patents, this claim language is nonetheless proper under 35 U.S.C. 112, second paragraph, because the special definition of this term is clearly stated in the patent specification. For the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the rejection.

Rejection of claims 3, 4, and 5

Claims 3-5 were rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite due to use of the phrase "specifically hybridizes." Office Action at page 9. Applicants respectfully disagree. As the Examiner acknowledges, the phrase "specifically hybridizes" is defined on page 17 of the specification. However, Applicants respectfully point out that in claims 3, 4, and 5, "specifically hybridizes" is only used in conjunction with additional clauses drawn to defined nucleic acid sequences. These additional clauses do not permit the broad interpretation of the phrase "specifically hybridizes" that has been alleged by the Examiner – *i.e.*, that "specifically hybridizes" "would encompass the partial anti-parallel, double stranded nucleic acid fragments that would occur under low stringency hybridization conditions..." Office Action at 9. Applicants therefore respectfully request reconsideration and withdrawal of the rejection.

Rejection of claim 27

Claim 27 was rejected under 35 U.S.C. § 112, second paragraph as indefinite because it employs improper Markush terminology. Office Action at page 9. Applicants have amended the claim to correct the Markush terminology by inserting the word "consisting." Applicants respectfully submit that this rejection is rendered moot by the foregoing amendment. In light of the amended claims, reconsideration and withdrawal of this rejection are respectfully requested.

Rejections Under 35 U.S.C. § 102(b)

Claims 1-5 and 21 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Ji *et al.* Plant Physiol., 1994 Feb, 104(2):453-459. Office Action at pages 9-10. The Office asserts that "Ji teaches isolation of a soybean cDNA encoding ferric leghemoglobin reductase on page 454 column 1, lines 56-59 and column 2 lines 1-17." Office Action at page 10. The Office further asserts that Ji *et al.* anticipates the Karunanandaa application because "the claims are drawn to a 'substantially purified' nucleic acid molecule encoding a soybean protein that ranges from 60% to 95% purification from the other molecules of the native background." Office Action at page 10. Applicants respectfully traverse this rejection.

Applicants disagree with the Office's implied assertion that the language of claims 1-5 and 21 is so broad as to render these claims anticipated by *any disclosure* of an isolated soybean nucleic acid. Whatever else Ji *et al.* discloses, it does *not* disclose a substantially purified nucleic acid molecule comprising (a) the nucleic acid sequence of SEQ ID NO: 1; (b) the amino acid sequence of SEQ ID NO: 622; or (c) a HES1 protein. Ji *et al.* at figure 3, page 456. Applicants therefore respectfully request reconsideration and withdrawal of the rejection.

Claims 25-27 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Hubbard *et al.* WO 97 22703 A2. Office Action at pages 9-10. The Office asserts that "Hubbard teaches a maize line carrying and expressing the antisense transcript of starch branching enzyme

IIb." Office Action at page 10. The Office further asserts that Hubbard anticipates the Karunanandaa application because the Karunanandaa claims are drawn to a plant selected from the group defined in claim 27 that is "transformed with an antisense RNA to any protein encoding gene or fragment thereof." Office Action at page 10. Applicants respectfully traverse this rejection.

Applicants strongly disagree with the Office's assertion that the language of claims 25-27 is so broad as to render these claims anticipated by *any disclosure* of a plant properly selected from the aforementioned list, which is transformed with an antisense RNA to *any protein encoding gene or fragment thereof.* Whatever else Hubbard discloses, it does *not* disclose a substantially purified nucleic acid molecule comprising the amino acid sequence of SEQ ID NO: 622. Hubbard specification at pages 7-10, and Hubbard sequence listing. Applicants therefore respectfully request reconsideration and withdrawal of the rejection.

Provisional Rejections for Obviousness-Type Double Patenting

Claims 1-5, 21, 25-26 were provisionally rejected under the doctrine of statutory type double patenting under 35 U.S.C. section 101. The Office alleges that claims 1-5, 21, 25 and 26 claim the same invention as that of claims 1-5, 21, 25 and 28 of co-pending Application No. 10/030,537. Office Action at page 11. Because the co-pending application has not yet passed to issue, Applicants respectfully request that the rejection be stayed.

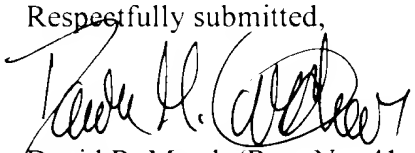
Claim 27 was provisionally rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claim 26 of copending Application No. 10/030,537. Office Action at page 11. Because the co-pending application has not yet passed to issue, Applicants respectfully request that the rejection be stayed.

Conclusion

In view of the above, each of the presently pending claims is believed to be in condition for immediate allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejections of the claims and to pass this application to issue. The Examiner is respectfully requested to contact Applicants' undersigned representative at 202.942.5071 to address any unresolved issues remaining in this application.

In the event that extensions of time beyond those petitioned for herewith are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned. Applicants do not believe any additional fees are due in conjunction with this filing. However, if any fees under 37 C.F.R. 1.16 or 1.17 are required in the present application, including any fees for extensions of time, then the Commissioner is hereby authorized to charge such fees to Arnold & Porter Deposit Account No. 50-2387, referencing matter number 16516.075.

Respectfully submitted,



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Clean Copy of Pending Claims

1. A substantially purified nucleic acid molecule that encodes a protein comprising the amino acid sequence of SEQ ID NO: 622.

2. The substantially purified nucleic acid molecule of claim 1, wherein the nucleic acid molecule comprises the nucleic acid sequence of SEQ ID NO: 1.

3. A substantially purified nucleic acid molecule that specifically hybridizes to a nucleic acid sequence of SEQ ID NO: 1 or its complement, wherein the nucleic acid molecule encodes a protein comprising the amino acid sequence of SEQ ID NO: 622.

4. The substantially purified nucleic acid molecule according to claim 3, wherein said nucleic acid molecule specifically hybridizes to a nucleic acid sequence of SEQ ID NO: 1 or its complement under high stringency conditions.

5. The substantially purified nucleic acid molecule according to claim 3, wherein said nucleic acid molecule specifically hybridizes to a nucleic acid sequence of SEQ ID NO: 1 or its complement under low stringency conditions.

21. A substantially purified nucleic acid molecule comprising a nucleic acid sequence which encodes a plant HES1 protein.

25. (Amended) A transformed plant having a nucleic acid molecule which comprises:

(A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to

(B) a structural nucleic acid molecule, wherein said structural nucleic acid molecule comprises a nucleic acid sequence encoding a protein comprising the amino acid sequence of SEQ ID NO: 622; which is linked to

(C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

26. The transformed plant according to claim 25, wherein said structural gene is in the antisense orientation.

27. (Amended) The transformed plant according to claim 25, wherein said plant is selected from the group consisting of rapeseed, maize, soybean, safflower, sunflower, cotton, peanut, flax, oil palm and Cuphea.

28. (New) An isolated nucleic acid molecule that encodes a protein comprising the amino acid sequence of SEQ ID NO: 622.

29. (New) The isolated nucleic acid molecule of claim 28, wherein the nucleic acid molecule comprises the nucleic acid sequence of SEQ ID NO: 1.

30. (New) An isolated nucleic acid molecule that specifically hybridizes to a nucleic acid sequence of SEQ ID NO: 1 or its complement, wherein the nucleic acid molecule encodes a protein comprising the amino acid sequence of SEQ ID NO: 622.

31. (New) The isolated nucleic acid molecule according to claim 30, wherein said nucleic acid molecule specifically hybridizes to a nucleic acid sequence of SEQ ID NO: 1 or its complement under high stringency conditions.

32. (New) The isolated nucleic acid molecule according to claim 30, wherein said nucleic acid molecule specifically hybridizes to a nucleic acid sequence of SEQ ID NO: 1 or its complement under low stringency conditions.

33. (New) An isolated nucleic acid molecule comprising a nucleic acid sequence which encodes a plant HES1 protein.

34. (New) A substantially purified nucleic acid molecule comprising a nucleic acid sequence which encodes a plant HES1 protein, wherein the plant HES1 protein comprises an oxysterol-binding protein consensus sequence.

35. (New) An isolated nucleic acid molecule comprising a nucleic acid sequence which encodes a plant HES1 protein, wherein the plant HES1 protein comprises an oxysterol-binding protein consensus sequence.

36. (New) A substantially purified nucleic acid molecule comprising a nucleic acid sequence which encodes a plant HES1 protein, wherein the plant HES1 protein comprises an amino acid sequence Glu (Lys,Gln) Xaa Ser His (His,Arg) Pro Pro Xaa (Ser, Thr, Ala, Cys, Phe) Ala, and wherein Xaa comprises an amino acid selected from the group consisting of Ala, Cys, Asp, Glu, Phe, Gly, His, Ile, Lys, Leu, Met, Asn, Pro, Gln, Arg, Ser, Thr, Val, Trp, and Tyr.

37. (New) An isolated nucleic acid molecule comprising a nucleic acid sequence which encodes a plant HES1 protein, wherein the plant HES1 protein comprises an amino acid sequence Glu (Lys,Gln) Xaa Ser His (His,Arg) Pro Pro Xaa (Ser, Thr, Ala, Cys, Phe) Ala, and

wherein Xaa comprises an amino acid selected from the group consisting of Ala, Cys, Asp, Glu, Phe, Gly, His, Ile, Lys, Leu, Met, Asn, Pro, Gln, Arg, Ser, Thr, Val, Trp, and Tyr.

38. (New) A substantially purified nucleic acid molecule comprising a complement of a nucleic acid sequence which encodes a plant HES1 protein, wherein the plant HES1 protein comprises an amino acid sequence Glu (Lys,Gln) Xaa Ser His (His,Arg) Pro Pro Xaa (Ser, Thr, Ala, Cys, Phe) Ala, and wherein Xaa comprises an amino acid selected from the group consisting of Ala, Cys, Asp, Glu, Phe, Gly, His, Ile, Lys, Leu, Met, Asn, Pro, Gln, Arg, Ser, Thr, Val, Trp, and Tyr.

39. (New) An isolated nucleic acid molecule comprising a complement of a nucleic acid sequence which encodes a plant HES1 protein, wherein the plant HES1 protein comprises an amino acid sequence Glu (Lys,Gln) Xaa Ser His (His,Arg) Pro Pro Xaa (Ser, Thr, Ala, Cys, Phe) Ala, and wherein Xaa comprises an amino acid selected from the group consisting of Ala, Cys, Asp, Glu, Phe, Gly, His, Ile, Lys, Leu, Met, Asn, Pro, Gln, Arg, Ser, Thr, Val, Trp, and Tyr.

Marked up Version of Claims

25. (Amended) A transformed plant having a nucleic acid molecule which comprises:

(A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to

(B) a structural nucleic acid molecule, wherein said structural nucleic acid molecule comprises a nucleic acid sequence encoding a protein [having an] **comprising the** amino acid sequence [selected from the group consisting] of SEQ ID NO: 622 [through SEQ ID NO: 626 or fragment thereof]; which is linked to

(C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

27. (Amended) The transformed plant according to claim 25, wherein said plant is selected from the group **consisting of** rapeseed, maize, soybean, safflower, sunflower, cotton, peanut, flax, oil palm and Cuphea.